

Wildfire Research

ISSUE SUMMARY:

The West and other parts of the United States have experienced significant forest fires in recent years. Wildfires can be a major source of air pollution including small particles and toxic gases, and emissions can travel thousands of miles. Emissions can irritate the eyes, nose, and throat, cause persistent coughing, wheezing and difficulty breathing, and can contribute to or cause premature death in individuals with preexisting lung and heart disease. Those at greatest risk are older adults, children, pregnant women, and people with heart or lung disease. They are advised to avoid or reduce wildfire smoke exposure.

EPA is working to understand: 1) who is most at risk for negative health effects of smoke; 2) what strategies and approaches are most effective in reducing smoke exposures and protecting public health; 3) how best to measure and model wildfire emissions; 4) what methods are most effective for communicating the impacts of wildfires on air quality, exposures, and health; and 5) wildland fire impacts on water quality. This work will help citizens and local governments to understand and minimize the impact of wildfire smoke on public health. EPA is working with other federal and state agencies, such as NOAA, CDC, USDA, DOI, DOD, and NASA, to address these issues.

UPCOMING MILESTONES:

- STAR RFA Coming Soon – Interventions and Communication Strategies to Reduce Health Risks of Wildfire Smoke Exposures <https://www.epa.gov/research-grants/research-funding-opportunities>
- Late 2020 or Early 2021 – Development of a prize-based challenge in collaboration with Federal, state, and local agencies to develop low cost and sustainable methods to reduce outdoor air pollutants in homes during wildfire smoke or high pollution episodes.
- Spring 2021 - will deliver to the interagency Wildland Fire Leadership Council an EPA-led assessment, in collaboration with DOI and USFS, evaluating the impacts of different fire management regimes, including prescribed fire.

BACKGROUND:

EPA's wildfire research highlights include:

- Supporting development of new ways to monitor wildfire emissions, including the use of air sensors.
- Providing more wildfire emissions data to the national emissions inventory that includes flaming and smoldering components of wild and prescribed fires involving varied fuel types.
- Advancing modeling capabilities to understand the impacts of wildfires on air quality.
- Assessing the air quality, health, and water quality impacts of different fire management regimes.
- Developing the [Smoke Sense](#) app, which allows anyone in the U.S. to use their smartphone to get real-time smoke, fire, and air quality information, learn about the health impacts from smoke and actions that can be taken, and anonymously report smoke and health observations. *Smoke Sense* provides insights into wildfire smoke exposures, citizen responses to reduce exposures, and participant health symptoms using a mobile app,

data visualization, and citizen science. From 2017-present, 41,000+ citizen scientists from 50 states have participated.

- Evaluating how filtration devices, such as facemasks and portable air cleaners, can reduce exposures during smoke episodes.
- Improving understanding of how effective various air handling systems are in reducing particle concentrations and providing clean air spaces to protect vulnerable populations during smoke episodes.
- Developing tools for assessing the vulnerability of small drinking water systems to wildfire and for predicting measurable negative impacts on drinking water quality.
- Evaluating how fire reduction management techniques can impact drinking water sources.
- Exploring best practices for prescribed fires to reduce smoke emissions and risks to human health and ecosystems.

KEY EXTERNAL STAKEHOLDERS:

- | | | | | | |
|--|--|---|--|---|--|
| <input checked="" type="checkbox"/> Congress | <input type="checkbox"/> Industry | <input checked="" type="checkbox"/> States | <input checked="" type="checkbox"/> Tribes | <input checked="" type="checkbox"/> Media | <input checked="" type="checkbox"/> Other Federal Agency |
| <input checked="" type="checkbox"/> NGO | <input checked="" type="checkbox"/> Local Government | <input type="checkbox"/> Other (Local unions) | | | |

States, tribes, and local governments need information to help make decisions during wildfires. Congress and the media are interested in this work as well. U.S. Forest Service and Dept of Interior are also interested in this work.

MOVING FORWARD:

- Upgrades to the Smoke Sense app to include other sensor data.
- Development of personalized exposure information to target approaches to reduce wildfire smoke exposures.
- Smoke Ready Communities initiative to increase community resilience to wildfire smoke.
- Expanded research on impacts of wildfires that burn urban structures and contaminated sites.
- Expanded evaluation of alternative fire management regimes to add additional geographic regions and case study fires, as well as expanding the types of impacts that are modeled.
- Expanded research efforts on the impacts of fires on water quality and vulnerable ecosystems.

LEAD OFFICE/REGION: ORD

OTHER KEY OFFICES/REGIONS: OAR, REGIONS 10, 9, 8, 7